

REMARKS

Claims 1, 3-4 and 7-12 were examined in the Final Office Action mailed March 4, 2010. The Applicant notes with appreciation the withdrawal of the previously pending rejections and objections, and the acceptance of the Terminal Disclaimer filed on November 30, 2009.

The following objections and rejections entered in the March 4, 2010 Final Office Action are currently pending:

- Objection to claim 1 for the presence of redundant language.
- Objection to claims 3 and 10 under § 37 CFR 1.75(c) as being of improper dependent form for failing to further limit the subject matter of claim 1.
- Rejection of claim 12 under 35 U.S.C. § 112, second paragraph, as indefinite, on the ground that there is insufficient antecedent basis for the limitation "new modules" in line 2, and further it being unclear how a module can be inspected, repaired and new.
- Rejection of claims 1, 3-4, 7, 9-10 and 12 under 35 U.S.C. § 103(a) as unpatentable over European Patent No. EP 0 708 877 B1 to Yaworsky, *et al.* ("Yaworsky"), in view of U.S. Patent Publication No. US 2002/0100159 ("Swartz").
- Rejection of claims 8 and 11 under § 103(a) as unpatentable over Yaworsky and Swartz in further view of U.S. Patent No. 5,285,572 to Rath, *et al.* ("Rath").

1. The Objection to the Language of Claim 1 Would Be Addressed.

The Applicant is requesting entry of amendments to claim 1 to remove a portion of the identified language. The Applicant is requesting entry of further amendments to this portion of claim 1, as the identified language is not wholly redundant. Specifically, the original language was directed to the recited repair stations being equipped and configured to address specific repairs. Therefore, in order to preserve this limitation in view of the prior amendments and the

Examiner's suggestion, the Applicant is requesting entry of amendments to claim 1 which read: "wherein modules and/or assemblies and/or individual parts to be repaired of at least one gas turbine are moved through repair stations adapted for the purpose of carrying out specific repair steps."

Because the requested amendments are made to preserve a previously recited feature (*i.e.*, the change is primarily to ensure proper grammar), the Applicant submits that nothing in these amendments would require further search or otherwise provide a ground for requiring submission of a Request for Continued Examination.

2. The Objection to the Claims 3 and 10 Would Be Addressed. The Applicants are requesting entry of an amendment to cancel claim 10, without prejudice to the subject matter therein.

As to claim 3, the Applicant submits that claim 3's limitations are not present in amended claim 1, and requests the pending objection to this claim be withdrawn. Claim 1 recites that modules, assemblies and/or parts "are repaired in different repair lines containing repair stations," and that there "two or more repair steps are carried out in succession within *one* repair line." Claim 3 requires *each* of the repair lines to be "subdivided into at least two repair steps." Because claim 1 only requires one repair line to be so divided, claim 3's requirement for *each* line to be divided makes clear that claim 1 has a different scope than claim 3. Accordingly, reconsideration and withdrawal of the objection to claim 3 is respectfully requested.

3. Claim 12 Is Clear and Its Limitations Have Antecedent Basis.

The Applicant respectfully request withdrawal of the pending § 112, second paragraph, rejection.

As discussed in original Specification ¶ [0022], if a component cannot be repaired, assembly of a turbine following the repair process may be completed with a new component, and thus there is sufficient description of the subject matter of claim 12 in the Specification. As to the claim language itself, the Applicant submits that there is nothing unusual about introducing a new element into a dependent claim, and that in the case of claim 12, there is no claim drafting issue with the addition of “new modules and/or assemblies and/or individual parts” in the claim.

As to the asserted lack of clarity as to “how a module can be inspected, repaired and new,” the Applicant submits that when read in the context of the original disclosure, as required, claim 12 is perfectly clear to one of ordinary skill. As noted in Specification ¶ [0022], after the repairs are performed on the modules, assemblies and/or individual parts, during the subsequent turbine assembly repaired modules, assemblies and parts may be supplemented by new modules/assemblies/parts may be substituted for unserviceable ones, as needed.

This feature is exactly what is claimed in claim 12: “wherein gas turbines are assembled from inspected and/or repaired and/or new modules and/or assemblies and/or individual parts after repair.” In other words, one of ordinary skill would understand that the phrase “after repair” refers to after the turbine repairs as a whole have been completed and the components are ready for

assembly into a turbine; this is the only reading of the language of claim 12 which is both consistent with the original Specification, and does not result in a nonsensical interpretation in which one of ordinary skill, having read ¶ [0022], would believe that the phrase “after repair” modifies the “new” parts such that the new parts have somehow been repaired.

Because it cannot be reasonably asserted that one of ordinary skill would misinterpret the language of claim 12 in a manner inconsistent with the Specification’s teachings, reconsideration and withdrawal of the pending § 112, second paragraph rejection of claim 12 is respectfully requested.

.4. The Claims Are Patentable Over Yaworsky, Swartz and Rath

The Applicant respectfully traverses the rejections of the claims based on the Yaworsky, Swartz and Rath references, on the grounds that these reference do not disclose or suggest all of the features of the present invention recited in the pending claims.

Yaworsky and Swartz. The Yaworsky reference is cited as teaching a method for maintenance of gas turbines in which the turbines are disassembled into modules and inspected and/or repaired, wherein the repair is subdivided into at least two repair steps. March 4, 2010 Final Office Action at 3 (citing Yaworsky at 14:30-43).

Swartz is cited as teaching steps in which a module is moved through repair stations in different repair lines (30, 32), “with a decision on the repair line to which a module to be repaired will be sent being made after inspection of the modules. *Id.* at 3-4 (citing Swartz ¶¶ [0018]-[0022], [0030]; Fig. 1). Swartz is

further cited as teaching that the modules are moved discontinuously on a cycle through the repair stations or the repair lines, where “discontinuous” is interpreted as referring to removing defective products from the assembly line for subsequent rework or scrapping. *Id.*, at 4.

The Applicants respectfully submit that Yaworsky actually only teaches the prior art approach that is *precisely* the sort of maintenance activity the present invention leaves behind. As noted in the Applicants’ previous response, “the maintenance and servicing of gas turbines ... has been based on the so-called workshop principle” in which the gas turbine “remains ... at one position or at one location” and “[t]he material, tools and personnel required to carry out the work are made available” to the turbine’s location. Specification ¶ [0004]. The prior art approach, however, had several disadvantages, including “that the maintenance process does not follow a defined structure” and due to “disturbances and delays” (for example, unforeseen problems identified during each gas turbine’s disassembly) “long times are required for maintenance and for servicing.” *Id.* ¶ [0005]. In contrast, the present invention “has overcome the previous prejudice that the conveyor belt principle is suitable only for new production of gas turbines, in particular aeroengines, but is not suitable for repairing them,” in part because “[i]n contrast to new production, the required work steps are not always the same for repairing gas turbines, in particular aeroengines, but are always dependent on the specific condition of the aeroengine to be repaired.” *Id.* ¶ [0008].

In Yaworsky, the gas turbine is disassembled, but there is no disclosure – or even a hint – at the conduct of this work at different worksites (let alone one a conveyor-principle work line). Rather, all that the cited paragraph states is that once the turbine's combustion chamber assembly is separated into its two major components (bulkhead 58 and chamber hooded portion 32b), these components may be separately repaired (the separation of the hood from the bulkhead being Yaworsky's advance to the prior practice of conducting repairs on a one-piece combination of the combustion chamber hood and the chamber's outer bulkhead, a procedure which was labor and special tool-intensive).

Moreover, the cited portion of Yaworsky does not suggest pending claim 1's requirement for different repairs along a repair line to be performed at sequential repair stations "adapted for carrying out of specific repair steps." Yaworsky at 14:30-43. Yaworsky is entirely silent on any suggestion of doing anything but the conventional "one-stop" disassemble-and-repair-at-one-station approach that conventional wisdom held was required because repair-line-based approaches were not believed viable.

Yaworsky therefore cannot reasonably be held up as teaching anything beyond the conventional stationary approach to turbine maintenance, and certainly does not suggest anything pointing toward its combination with any other reference to obtain the present invention.

As to Swartz, this reference is cited as teaching "modules to be repaired [being] moved through repair stations in order to carry out repair steps," a decision on which repair line being made "after inspection of the modules," and

modules being “moved discontinuously on a cycle through the repair stations.”

March 4, 2010 Final Office Action at 3-4. The Applicants respectfully submit that Swartz does not teach – even with the broadest reasonable interpretation, these features of the invention recited in the pending claims.

Swartz actually teaches:

- An automotive engine cylinder head assembly workcell 10.
- Receipt of bare cylinder ends into work cell 10 on conveyor 74.
- Loading of automotive engine cylinder heads by robotic machine 72 from conveyor 74 onto work-piece sliding feeding tables 70, 70' *whenever a table 70, 70' is empty.*
- Assembly of completed cylinder head (with valves, valve springs, valve keepers, etc.) by robots 50, 50'.
- Following completion of an air test to verify correct assembly, robots 50, 50' place the completed cylinder heads on sliding tables 70, 70', and
- Robot 72 places completed cylinder heads which passed the air test on delivery conveyor 34 for delivery to subsequent engine assembly stations, and places completed cylinder heads which did not pass the air test onto pallet 140 for later examination for inspection, repair and/or /salvage.

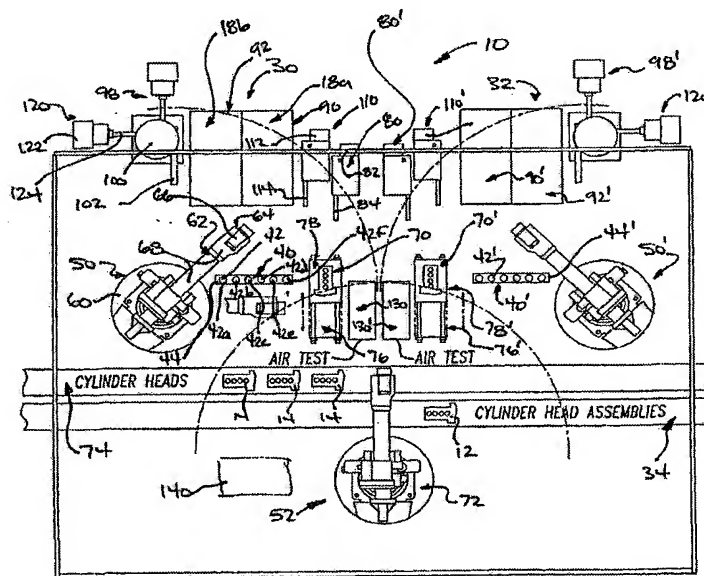


Fig-1

As a first matter, Swartz is directed to a new product assembly process, *i.e., there is no evaluation before the new cylinder heads are inserted into the workcell to determine whether and what sort of repair is required* – obviously, because Swartz never contemplated any repair on this new product assembly line. Accordingly, the assertion in the pending Final Office Action that Swartz teaches transport of “modules to be repaired” are “moved through repair stations” is unsupportable.¹

Nor does Swartz teach or suggest “modules repaired on different repair lines 30, 32.” March 4, 2010 Final Office Action at 3. The work stations 30, 32, are not “repair lines” in any reasonable interpretation of this term *in the context of the original Specification, as required*. As noted in Swartz ¶ [0022], elements 30, 32, are “first and second assembly cells 30 and 32, respectively,” which “are similarly equipped and operated” to perform the *same* new cylinder head assembly processes.

Further, contrary to the assertion that “a decision on the repair line to which a module to be repaired will be sent [is] made after inspection of the modules,” the only optional new cylinder head assembly routing decision taught in Swartz is a decision as to where the completed cylinder head assembly should

¹ Nor can it reasonably be asserted that Swartz may be read “broadly” (in reality, unreasonably over-broadly) as pointing one of ordinary skill toward the present invention’s approach to handling turbine repairs. Conventional robotic assembly lines such as Swartz’ have been well known for decades. Yet despite the existence of this knowledge in the art, nothing in Swartz or elsewhere suggested going against the conventional wisdom in the turbine maintenance field *that turbine repairs were not suited to production line techniques* to attempt to obtain the present invention. The present invention and the state of the prior art provide what amounts to a textbook example of the sort of indications of non-obviousness the Supreme Court in the *KSR* decision as supporting patentability.

be sent *after* the cylinder head emerges from the assembly cells 30, 32: if the air test is passed, the new cylinder head assembly is placed on out-going conveyer 34; if the air test is failed, the new cylinder head assembly is stacked on pallet 140 for later rework or scraping. Swartz ¶ [0029]. In other words, the pending rejection is internally inconsistent, because even if assembly cells 30, 32 were considered to be “repair lines,” no decision as to “the repair line to which a module to be repaired will be sent” is made *after* the new cylinder head assemblies leave the assembly cells 30, 32.

Finally, Swartz does not teach or suggest a further feature of the present invention. It is maintained that Swartz teaches that “modules are moved discontinuously on a cycle through the repair stations or the repair lines,” where the movement is asserted to be “discontinuous in that modules that fail the air test are moved to a different station than those that pass [the air test].”

March 4, 2010 Final Office Action at 4.

As used in the original disclosure of the present application, “discontinuously cycled” refers to the conveyor line concept of advancing elements down a line on a regular cycle, where the elements stop at stations for work to be performed, *i.e.*, a non-continuous conveyor movement. *See, e.g.*, Original Specification ¶ [0008].

Swartz teaches that the new cylinder head assemblies which fail the air test are simply set aside on a pallet – there is simply no further teaching as to their disposition, other than they will subsequently be looked at to determine whether to re-work or scrap the failed assemblies – there is *no* form of conveyor

involved here (it is a dead-end dumping of failed components on a scrap pallet), let alone the sort of continuous conveyor advance, halt, station-work, advance to next station for further work, etc. discontinuous cyclic movement taught in the present disclosure.

In sum, the Applicants submit that, even stretching Swartz to the absolute limits of reasonable interpretation of claim terms (as they are defined and used in the original disclosure – the context in which they are required to be evaluated), Swartz' robotic new cylinder head assembly process would not have begun to point one of ordinary skill in the art to move contrary to the conventional wisdom that turbine repairs were not suitable for conveyor line-type processing, let alone to modify Yaworsky's one-stop turbine repair station by build pending claim 1's extensively-recited novel approach to turbine maintenance. Accordingly, reconsideration and withdrawal of the pending § 103(a) rejections based on these references is respectfully requested.²

CONCLUSION

In view of the foregoing, the Applicant submits that claims 1, 3-4, 7-9 and 11-12 are in condition for allowance. Early and favorable consideration, and issuance of a Notice of Allowance for these claims is respectfully requested.

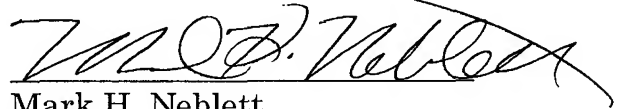
If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

² The Rathi reference, cited for inclusion of a heat treatment process in an assembly line, does not otherwise cure the deficiencies of the Yaworsky and Swartz references. Claims 8 and 11 are therefore also patentable over these references under § 103(a).

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket # 011235.55726US).

May 17, 2010

Respectfully submitted,

A handwritten signature in dark ink, appearing to read "Mark H. Neblett", is written over a horizontal line.

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